Made her diversion from his humble birth,
'Till Death at last his thread of life cut short.

To misery's offspring or the child of want,
His arms were open and his heart alive,
But penury ordain'd his purse so scant,
A sigh or tear was all he had to give.

No other virtue in him seek to find,
Or the remembrance of his faults be made,
Nor let stern censure with a voice unkind,
Disturb the quiet of his peaceful shade.

DISCOVERIES AND IMPROVEMENTS IN ARTS, MANUFACTURES, AND AGRICULTURE.

On weeding or cleaning Land by George Rennie, Esq. of Phantassie. From the Communications of the Board of Agriculture.

WEEDS ought to be considered as robbers, that pilfer the food necessary for supporting the more valuable and useful vegetables. Viewed in this light, certainly all possible means for destroying them ought to be used; and if their total extirpation from the soil cannot be accomplished, their propagation should at least be checked, and their numbers diminished as much as possible. The weeds most commonly met with in this country are, 1, couch-grass; 2, knot, or nut-grass; 3, dockins, or dock weed; 4, thistles; 5, tussilago, or colts-foot; 6, crow-foot; 7, nettles; 8, rag-weed; 9, mugwort; 10, mountain-daisy, a species of the white gowan; all of which may be considered as perennials. The principal annuals are, 1, scelloch. or crop-weed; 2, wild mustard; 3, spurry, or rhums; 4, annual white gowan; 5, goose-grass; 6, dornel; 7, popple. To destroy these, and other noxious weeds, the operations of summer fallowing, horse and hand hoeing, with hand-picking, are commonly employed, though often with less effect than might be expected. The object of this paper therefore, is to illustrate the nature of these weeds, and to explain the best modes of removing them; matters certainly of great importance to the practical husbandman, though hitherto too much neglected in many places.

I. *Perennial Weeds.*

1. *Couch-grass.* This variety of grass, the most inveterate enemy of every farmer, requires no description, being well known from one end of the island to the other. To keep land free of it requires unremitted care and labour, though it may be effected by frequent ploughings in the summer months, harrowing and rolling repeatedly, and, above all, by gathering with the hand every particle of couch that is brought to the surface after the several ploughings. Attention to these operations must never cease, otherwise the enemy will soon be restored to his primitive strength; but, if constantly bestowed, the labour of each rotation will gradually become more easy in the execution, and the expense thereof be proportionably diminished.

2, *Knot-grass.* This is a most baneful weed, and more difficult to be extirpated than the preceding one. It is called knot or nut-grass from the roots of the plant resembling a parcel of nuts fixed together, of different sizes. When this parcel is separated by harrowing and rolling, the single nut will lie upon the surface, exposed to the severest drought for many weeks, without losing its vegetative powers; and when moistened by rain or ploughed into the ground, will instantly grow again with as much vigour as if it had not been disturbed. In fact, there is no remedy against its pernicious effects, but carefully gathering the most minute fragment of the nut. Knot-grass also carries a large quantity of seed; so that no field, of which it is once in possession, can possibly be cleared without the steadiest perseverance of a farmer for many years.

3, *Dockweed*, or *dockins.* This abominable weed is very prevalent in many districts, and is a most troublesome enemy upon all wet soils where it once gets footing. It propagates both by root and seed; the latter of which is produced in such abundance, that one stalk is sufficient to furnish seed for an acre. Many negligent farmers when cutting their crops, allow the docks to stand, which is a most shameful and pernicious practice; as by the first gale of wind the seeds of the standing docks are blown over the whole field,

to their great loss in after seasons. The only sure method of getting quit of docks is to pull every stalk that can be discerned during the summer months, especially at those times when the ground may have been moistened by rain, and to separate any that may still remain, from the corn at the time of cutting; after which the whole may be removed to the end of the field and burned. If the ground is not so wet in summer as to admit the pulling of docks by the root, they ought at all events to be cut over, which will prevent a fresh increase of plants from the seed for that season.

4, *Thistles*, though common enough on all old grass lands and pastures, are now kept within moderate bounds upon all well-cultivated farms. Of this weed there are three varieties, viz. the rough or common thistle; the bear, or big thistle; and the soft, or swine-thistle. The same cure will answer for them all, namely, good ploughing and regular fallowing, care being taken at the same to cut and carry off any straggling plants that may happen to be among the corn crops, so as fresh seeds of this weed may not be sown. Old grass lands, of every description, and road sides, ought also to be annually cut with the scythe; a practice not so much attended to as it deserves

5. *Tussilago* or *Colts-foot*. This root is very hurtful to all lands under tillage when it once gets a footing, and till lately was considered as a weed which could hardly be exterminated. It flowers early in April, and sheds its seeds in the end of that month, or first of May, according to the state of the weather, always keeping as much earth about its roots as enables it to remain in life in spite of ploughing and harrowing. Gathering the flowers has been resorted to as the means of extirpation; but as this weed continues to blossom every day for weks together, the practice was found ineffectual. The writer of this paper, after combating this pernicious weed for thirty years, at last stumbled upon a remedy equally simple and efficacious, which is, to pull up the roots or stocks immediately after the corn is cut, at least as soon after as conveniency will permit. Upon examination it will be found, that around the neck of the stock, or root, within an inch of the surface, there is a parcel of buds, about the size of a pea, from which in the spring the flowers, and of course the seeds are produced. By pulling up the roots, therefore, which at that season is easily accomplished, the whole seed is at once destroyed. The best method of performing this operation is as follows: Put a number of boys or girls under the charge of a careful overseer, furnishing each of them with a small piece of iron, about the size of a boy's little finger, split up like the toes of a hammer, at one end. By means of this simple implement the root will be easily extracted, at least, to the depth of the buds, in the event of its breaking above them when drawn by the hand. The roots must then be taken to a place of safety and buried; for, if laid on the sides of the roads or stone walls, they will flower in the ensuing spring in spite of all the rough treatment received in the digging process. If this plan be carefully followed for two or three years, success may be depended upon. It would however, be proper in the spring season, carefully to look over the lands thus treated; and should either flower or root make their appearance, let it be pulled, and carried off immediately.

6. *Crowfoot*. This weed, from its yellow flowers, is called *butter-cup* in England, the vulgar believing that it not only gives colour, but also adds to the quantity of butter, though this idea appears to be founded upon mistake. It abounds in all old meadow grounds, and is eaten by cattle in the early part of the season, when tender and young; but after it flowers and seeds no animal will taste it. Crow-foot also prevails in wet tillage-lands, and has the effect of binding the soil so close, as almost to prevent the growth of corn. As it requires much harrowing and rolling to make it separate from the earth, it can only be effectually eradicated during the process of summer-fallow, when it ought to be carefully picked and burned.

7. *Nettles*. There are three sorts of nettles which infest the ground, viz. the common nettle, that grows about old buildings, stone walls, and upon old rich pastures. This is a perennial plant, and can easily be got quit of by pulling it in wet weather by the hand, covered with a strong glove, an operation performed to the greatest advantage when the plant is in flower. The other two sorts are annuals; one of them called *dog-nettle*, is rarely seen in old tillage land, but frequently appears in fields newly ploughed from

grass, especially if recently limed; the other grows in gardens and on rich pieces of ground, but the injury from it is of small consequence.

8. *Ragweed.* This weed makes its appearance in grass lands, and may be kept down by sheep, if put upon it early in the season. If allowed to get into full growth, no animal whatever will taste it; therefore, under that circumstance, the best way of destroying this weed is to cut it over before seeding, provided it cannot be pulled up by the root, which assuredly is the most effectual method.

9 and 10. *Mug-wort* and *Mountain-daisy.* The same means may be used with success and effect in the extirpation of these weeds, as are directed for the extermination of dock-weed or dockins.

II. *Annual Weeds.*

1. *Scel'och* or *Crop-weed.* Of all the seed-weeds known in Scotland, this seems to be the most pernicious, occasioning immense labour to the farmer, and lessening the crops which he cultivates This weed is to be found in greater or lesser numbers in all dry soils, particularly those which have been long cultivated; and so amply stocked does the soil appear to be with its seed, that though the weeds may be thinned and lessened from year to year, it seems physically impossible to remove them altogether. The shelloch or crop-weed, has a small root which it puts pretty deep into the ground; and its leaf, when about the size of a cabbage-plant-leaf, so much resembles that of a young turnip, that the one is often mistaken for the other. In the progress of its growth, which is very rapid, it puts out a middle stem, on which the flower is produced, and keeps growing to a considerable size, robbing and almost starving every other plant within its reach. It carries an immense quantity of seed, which is inclosed in an oily husk, and will, when lodged at a certain depth of the earth, out of the influence of the sun and air, preserve its vegetative powers for many years.

2. *Wild Mustard.* This weed is more nice in it choice of soil than the last mentioned one, preferring rich dry gravels and loams, though often met with also upon clay soils which are in high condition. It is by no means so injurious as the scelloch, or crop-weed.

3 *Spurry* or *Rhums.* This kind of weed does not branch out like the two former ones, having seldom more than one stalk, and puts forth a yellow flower, not unlike that of wild mustard, from which a pod is formed for the seed, in shape somewhat resembling a louse This variety is neither so numerous nor hurtful as the two already spoken of, though to a certain extent its effects upon corn-crops are mischievous.

4. *Goose-grass.* This species of grass grows chiefly among wheat, and resembles a stalk of oats very much. Forty years ago it was very prevalent in Scotland, but is now seldom seen. The best method of getting free of it is to sow clean seed, and to take care that no chaff, wherein is the least mixture of goose-grass seed, be thrown upon the dunghill.

5. *Dornel.* This variety of weed appears somewhat like a stalk of rye-grass, and is found chiefly in barley fields. The observation given with repect to the best method of getting free of goose-grass applies to dornel also. Some other weeds, such as those called cock-combs, blue blaverts, gowans, &c. &c. might have been mentioned; but as the cure for all annuals is the same, it seems unnecessary to notice them.

It remains now to speak of the most appropriate methods of keeping annual weeds within bounds, as their complete extirpation can scarcely be expected; and these may be confined to two measures First, to bring the seeds in the ground within the limits of vegetation; and, secondly, to destroy every weed that vegetates, and thus gradually lessen the original stock.

In the first place, as the seeds of annual weeds are furnished with the means of preservation while stored in the ground, it is absolutely necessary to bring them into life before their destruction can be accomplished. This consists in ploughing, thereby bringing the seeds to the surface, or so near to it as that vegetation will take place, which process may be hastened by harrowing and rolling the ground, till it became soft and reduced. In this way the seeds within two or three inches of the surface may be expected to vegetate according to circumstances, such as the richness of the soil, the fineness of the mould, and the degree of moisture which may prevail when the above processes are executed.

In the second place; when the first crop of weeds appears above the surface a second ploughing should be given, by

which that crop will instantly be destroyed, and a foundation laid for producing another. Harrowing and rolling should again be resorted to; and in this way several crops may be annihilated, especially in moist warm seasons, before turnips are drilled. When under that crop, both the hand and horse hoe should be constantly employed whenever weeds appear; and upon no account should a single one be allowed to run to seed. By paying due attention to these matters, many farms, which, not forty years ago, were a nest of seed-weeds, have now been brought into order, that is to say, the weeds are kept under subjection, and easily managed.

To assist in these measures it may even be necessary to hand-weed spring crops of corn in many instances, and also to bestow diligent attention upon cleaning beans, least one year's seeding, according to the old adage, should aftewards cause many years weeding. It is obvious that by such attention a considerable diminution in the number of weeds must annually take place, till at last these robbers of the soil be brought into such complete subjection, that no regular and steady farmer need be under much apprehension of any bad consequences to his crops from their attacks.

Before concluding this paper, it may be proper to state, that it would be of singular advantage to agriculture, were some general rules and regulations formed with regard to cutting and destroying weeds, especially those whose seeds are blown by the wind, and of course dangerous to the whole neighbourhood. That much and serious injury is often committed in that way is unquestionable; therefore, in my humble opinion, either some general law should be enacted upon the subject, or a clause or clauses be engrossed in every lease, binding and obliging the tenant to pull, cut, and destroy thistles, docks, and all weeds whose seeds are apt to be driven about by the wind, to the annoyance of others. The proprietors or tenants of all old grass lands should likewise be obliged to destroy thistles, &c. every year; and the like obligation should be laid upon tenants adjoining to the sides of roads, where weeds are often suffered to stand and shed their seed, to the manifest detriment of improved husbandry.

On the comparative merits of Horses and Oxen in the business of a Farm. By George Whitworth, of Cuxwold, near Castor, Lincolnshire.

(From the Communications of the Board of Agriculture.)

Observing the Board of Agriculture desires to be informed of the comparative value of horses and oxen in the general business of a farm, I venture to give the result of my experience, and shall endeavour to make a fair comparison on this occasion; and if I offer any thing that will be at all acceptable to so highly-respectable an Institution in the course of this essay, I shall be happy to be honoured by its publication for the benefit of my country.

I have been long in the habit of using both horses and oxen on a pretty large scale; and I am confident that at this moment, both myself and all the farmers in this district employ too many of the former, and use the latter in too confined a manner. In this part of the kingdom the ox is rarely used in the plough: in the opinion of some of the most respectable agriculturists of the country, he is too slow to be profitably adapted to that part of husbandry; and I have often incurred much ridicule, and many severe sarcasms, from my neighbours, on making the attempt to plough with them in the manner of horses; but I am rewarded by my success; and I hope before long to perform a considerable part of the business of the farm with them.

The oxen I plough with are of a mixed breed, between the Durham and Lancashire sorts; they are large and tolerably active; their harness is chiefly of wood, the cost of it is about 15*s.* per ox. I use two to one plough (the common swing plough); they go abreast, are guided by lines, and are as docile as horses. They work with my horses every day, and I dare say, would be happy to be fed with them; but this they are denied; for though they contribute so much to producing the corn, they rarely taste it; however, at the close of the last turnip season, I was obliged to press the oxen very hard, and I then gave each of them half a peck of split barley, which seemed to benefit them considerably; and had it not been for their aid, I should not have been able to have sown my turnips in season, the horses being unable to work half the proper time, from a distemper which much resembled the strangles, and which the